

Abstract

5 The invention relates to a process for preparing chlorine by catalytic gas-phase oxidation of hydrogen chloride, which comprises the steps:

- a) providing a feed gas stream I comprising hydrogen chloride and a feed gas stream II comprising oxygen;
- 10 b) in a first oxidation stage, feeding the feed gas stream I, the feed gas stream II, if desired a recycle stream Ia comprising hydrogen chloride and if desired an oxygen-containing recycle stream IIa into a first oxidation zone and bringing them into contact with a first oxidation catalyst so that a first partial amount of the hydrogen chloride is oxidized to chlorine and a gas stream III comprising chlorine,
15 unreacted oxygen, unreacted hydrogen chloride and water vapor is obtained;
- c) in a second oxidation stage, feeding the gas stream III into a second oxidation zone and bringing it into contact with at least one further oxidation catalyst so that a second partial amount of the hydrogen chloride is oxidized to chlorine
20 and a product gas stream IV comprising chlorine, unreacted oxygen, unreacted hydrogen chloride and water vapor is obtained;
- d) isolating chloride, if desired the recycle stream Ia and if desired the recycle stream IIa from the product gas stream IV,

25 wherein the first oxidation catalyst in the first oxidation zone is present in a fluidized bed and the further oxidation catalyst or catalysts in the second oxidation zone is/are present in a fixed bed.

30 (Figure 1)